UNIVERSITI TEKNOLOGI MARA

AN INVESTIGATION INTO THE ANTIPROLIFERATIVE EFFECTS OF CURCUMA LONGA WATER EXTRACT ON COLON AND LIVER CANCER CELL LINES

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Dissertation submitted in partial fulfillment of the requirements for degree of Bachelor Pharmacy (Hons)

Faculty of Pharmacy

November 2009

ACKNOWLEDGEMENT

First and foremost, I would like to say my highest gratitude to Allah The Almighty for the strength and courage that He has given me. Without those special capabilities that He has provided me this thesis would likely be an impossible mission.

Grateful acknowledgements I would like to express to Prof. Dr. Aishah bt. Adam as Dean of Faculty of Pharmacy and also as my advisor, for her help and endless motivation, and continuous support throughout the completion of my undergraduate study and research, for her patience, motivation, enthusiasm, immense knowledge and enlightening me the first glance of research. Her guidance helped me in all the time of research and writing of this thesis. Not forgetting the most importantly for the approval of this project.

Many thank to the rest of my thesis committee: Prof. Dr. Abu Bakar Abd. Majeed, Associate Prof. Dr. Ibtisam, Associate Prof. Dr. Kalavathy, Dr. Mizaton, Mr. Aloysious, and Miss Jannah for their encouragement, insightful comments, and hard questions.

Warmth gratitude to all my fellow labmates of Pharmacotoxicology Department, Faculty of Pharmacy, UiTM, Shah Alam, research assistant; Mr. Saad, and to post graduate students; Mr. Wesam, Mr. Ijai, Miss Sarah, Miss Shaharina, Mr. Suhaimi, Mr. Nuzul, Mr. Aidil, Mr. Teng, Miss Masnordiana, Miss Nina, Miss Farhana, Mr. Rozali, Mr. Ali and Miss Syikin for their kindness, helpfulness, guidance, and for all the fun we have had during the last 6 months.

Not to miss, my special thank to all my thesismate, Aizamin, Nordayanti, Iylia Nordiana, Afnan Shihab and Bob Iskandar for lent me the ears and brains to hear and share all the problems that occur during the laboratory work and thesis writing.

Last but not the least, warmest thank you to my parents Mohd Nawi Yaacob and Razanah Mohd Fauzi, and for all my family members for supporting me spiritually throughout my life.

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ABSTRACT

Turmeric (*Curcuma longa*) is a member of a tropical plant family which is proven to be a good source of phenolic compounds. The main active ingredient known as curcumin was claimed to have antiproliferative and cytoprotective effects towards many cancerous cell lines. The aims of this study were to determine the *in vitro* cytotoxicity and cytoprotective activity of the water extract of *Curcuma longa* on two types of cancerous cell lines, colon and liver cancer cells. For determination of cytoprotective properties, the cancerous cell lines were induced to undergo toxicity with H_2O_2 and then treated with the extract. The results showed that *Curcuma longa* extract is safe since the IC_{50} values were higher than 1000 µg/ml. At the concentration used in this study 500 and 750 µg/ml, *Curcuma longa* extract showed no cytoprotective effects.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Turmeric is scientifically known as *Curcuma longa* (Zingiberaceae). It is a plant that contains naturally occurring phenolic compounds of curcuma (diferulolmethane) as the major bioactive secondary metabolite from its rhizome. It is a cheap and popular dietary spice and pigment that have been used for thousands of years in Asian cookery as a food flavouring agent which is one of the ingredients in curries. Turmeric is also used as an agent for healing various illnesses in Asian culture. Other uses include the usage in the textile and pharmaceutical industries and in Hindu religious ceremonies. Traditional Indian medicine still advocates the use of turmeric for biliary disorders, anorexia, cough, diabetic wounds, hepatic disorders, rheumatism, and sinusitis (Jain and DeFilipps, 1991). Since many of the population worldwide are exposed to *Curcuma longa*, and due to it variety of usage, many studies have been carried out aimed at elucidating some of its activities. Much research have been done to study the properties of curcumin in turmeric. There is a high dietary intake of in Asia, where adults consume up to > 200 mg of curcumin/day or up to 7.8 μmol/kg of body weight (Commandeur and Vermeulen, 1996).